

**Amendments to and listing of the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-51. (Cancelled)

52. (Currently amended) A single wall carbon nanotube having one or more substituents covalently bonded to a sidewall of the single wall carbon nanotube, wherein the substituents are selected from the group consisting of alkyl, acyl, aryl, aralkyl, halogen, substituted thiol, unsubstituted thiol, substituted amino, unsubstituted amino, hydroxy, and OR', wherein R' is selected from the group consisting of hydrogen, alkyl, acyl, aryl, aralkyl, halogen, substituted thiol, unsubstituted thiol, substituted amino, unsubstituted amino, a linear carbon chain, and a cyclic carbon chain, and wherein the amount of substituent bonded to carbon atoms of the single wall carbon nanotube is at a substituent to carbon ratio of from (a) one substituent to about 26 carbon atoms to (b) one substituent to about two carbon atoms.

53. (Cancelled)

54. (Currently amended) The single wall carbon nanotube of claim 53 ~~52~~, wherein the substituent is the linear carbon or the cyclic carbon chain or both, and wherein the linear carbon chain or the cyclic carbon chain or both is substituted with at least one heteroatom.

55. (Currently amended) The single wall carbon nanotube of claim 53 ~~52~~, wherein the substituent is the linear carbon or the cyclic carbon chain or both, and wherein the linear carbon chain or the cyclic carbon chain or both is substituted with one or more of the group consisting of =O, =S, hydroxy, an aminoalkyl, an amino acid, and a peptide of 2-8 amino acids.

56. (Previously presented) The single wall carbon nanotube of claim 52, wherein the substituents are alkyl or phenyl.

57. (Previously presented) The single wall carbon nanotube of claim 52, further comprising metal complexed to at least one of the substituents.

58. (Previously presented) The single wall carbon nanotube of claim 57, wherein the metal is selected from the group consisting of Group VI B metals and Group VIII B metals.

59. (Cancelled)

60. (Previously presented) The single wall carbon nanotube of claim 52, wherein the amount of substituent bonded to the carbon atoms of the single wall carbon nanotube is at a substituent to carbon ratio of from (a) one substituent to about ten carbon atoms to (b) one substituent to about two carbon atoms.

61. (Previously presented) The single wall carbon nanotube of claim 60, wherein the amount of substituent bonded to the carbon atoms of the single wall carbon nanotube is at the substituent to carbon ratio of from (a) one substituent to about three carbon atoms to (b) one substituent to about two carbon atoms.

62. (Currently amended) A product made by the process of covalently bonding substituents to carbon atoms on a sidewall of the single wall carbon nanotube, wherein the substituents are selected from the group consisting of alkyl, acyl, aryl, aralkyl, halogen, substituted thiol, unsubstituted thiol, substituted amino, unsubstituted amino, hydroxy, and OR', wherein R' is selected from the group consisting of hydrogen, alkyl, acyl, aryl, aralkyl, halogen, substituted thiol, unsubstituted thiol, substituted amino, unsubstituted amino, a linear carbon chain, and a cyclic carbon chain, and wherein the amount of substituent bonded to carbon atoms of the single wall carbon nanotube is at a substituent to carbon ratio of from (a) one substituent to about 26 carbon atoms to (b) one substituent to about two carbon atoms.

63. (Cancelled)

64. (Currently amended) The product of claim ~~63~~ 62, wherein the linear carbon chain or the cyclic carbon chain or both is substituted with at least one heteroatom.
65. (Currently amended) The product of claim ~~63~~ 62, wherein the linear carbon chain or the cyclic carbon chain or both is substituted with one or more of the group consisting of =O, =S, hydroxy, an aminoalkyl, an amino acid, and a peptide of 2-8 amino acids.
66. (Previously presented) The product of claim 62, wherein the substituents are selected from the group consisting of fluorine, alkyl and phenyl.
67. (Currently amended) The product of claim 62, further comprising the step of complexing a metal to at least one of the substituents such that the product comprises a complexed metal.
68. (Previously presented) The product of claim 67, wherein the metal is selected from the group consisting of Group V I B metals and Group VIII B metals.
69. (Cancelled)
70. (Previously presented) The product of claim 62, wherein the amount of substituent bonded to the carbon atoms of the single wall carbon nanotube is at the substituent to carbon ratio of from (a) one substituent to about ten carbon atoms to (b) one substituent to about two carbon atoms.
71. (Previously presented) The product of claim 70, wherein the amount of substituent bonded to the carbon atoms of the single wall carbon nanotube is at the substituent to carbon ratio of from (a) one substituent to about three carbon atoms to (b) one substituent to about two carbon atoms.
72. (Currently amended) A product made by the process comprising:  
(a) fluorinating a single wall carbon nanotube;

(b) reacting the fluorinated single wall carbon nanotube with a compound containing a substituent to covalently bond the substituents to a sidewall of the single wall carbon nanotube, wherein the substituents are selected from the group consisting of alkyl, acyl, aryl, aralkyl, halogen, substituted thiol, unsubstituted thiol, substituted amino, unsubstituted amino, hydroxy, and OR', wherein R' is selected from the group consisting of hydrogen, alkyl, acyl, aryl, aralkyl, halogen, substituted thiol, unsubstituted thiol, substituted amino, unsubstituted amino, a linear carbon chain, and a cyclic carbon chain, and wherein the amount of substituent bonded to carbon atoms of the single wall carbon nanotube is at a substituent to carbon ratio of from (a) one substituent to about 26 carbon atoms to (b) one substituent to about two carbon atoms.

73. (Cancelled)

74. (Currently amended) The product of claim ~~73~~ 72, wherein the linear carbon chain or the cyclic carbon chain or both is substituted with at least one heteroatom.

75. (Currently amended) The product of claim ~~73~~ 72, wherein the linear carbon chain or the cyclic carbon chain or both is substituted with one or more of the group consisting of =O, =S, hydroxy, an aminoalkyl, an amino acid, and a peptide of 2-8 amino acids.

76. (Previously presented) The product of claim 72, wherein the substituents are alkyl or phenyl.

77. (Currently amended) The product of claim 72 made by the process further comprising the step of complexing a metal to at least one of the substituents such that the product comprises a complexed metal.

78. (Previously presented) The product of claim 77, wherein the metal is selected from the group consisting of Group VI B metals and Group VIII B metals.

79. (Cancelled)

80. (Previously presented) The product of claim 72, wherein the amount of substituent bonded to the carbon atoms of the single wall carbon nanotube is at the substituent to carbon ratio of from (a) one substituent to about ten carbon atoms to (b) one substituent to about two carbon atoms.

81. (Previously presented) The product of claim 80, wherein the amount of substituent bonded to the carbon atoms of the single wall carbon nanotube is at the substituent to carbon ratio of from (a) one substituent to about three carbon atoms to (b) one substituent to about two carbon atoms.

82. (Previously presented) The product of claim 72, wherein said step of fluorinating the single wall carbon nanotube comprises exposing the single wall carbon nanotube to a fluorinating agent.

83. (Previously presented) The product of claim 82, wherein the fluorinating agent is selected from the group consisting of fluorine,  $\text{ClF}_3$ ,  $\text{BrF}_3$ ,  $\text{IF}_5$ ,  $\text{XeF}_2$ ,  $\text{XeF}_4$ ,  $\text{AgF}_2$ , and  $\text{MnF}_3$ .

84. (Previously presented) The product of claim 82, wherein the fluorinating step occurs at a reaction temperature up to about  $500^\circ\text{C}$ .

85. (Previously presented) The product of claim 82, wherein the reaction temperature is between about  $250^\circ\text{C}$  and about  $400^\circ\text{C}$ .

86. (Currently amended) A derivatized single wall carbon nanotube made by the process comprising the steps of:

- (i) reacting the single wall carbon nanotube with a fluorinating agent;
- (ii) solvating the single wall carbon nanotube from step (i); and

(iii) reacting the fluorinated single wall carbon nanotube with a compound containing a substituent to covalently bond the substituent to a sidewall of the single wall carbon nanotube, wherein the substituents are selected from the group consisting of alkyl, acyl, aryl, aralkyl, halogen, substituted thiol, unsubstituted thiol, substituted amino, unsubstituted amino, hydroxy, and OR', wherein R' is selected from the group consisting of hydrogen, alkyl, acyl, aryl, aralkyl, halogen, substituted thiol, unsubstituted thiol, substituted amino, unsubstituted amino, a linear carbon chain, and a cyclic carbon chain, and wherein the amount of substituent bonded to carbon atoms of the single wall carbon nanotube is at a substituent to carbon ratio of from (a) one substituent to about 26 carbon atoms to (b) one substituent to about two carbon atoms.

87. (Cancelled)

88. (Currently amended) The derivatized single wall carbon nanotube of claim 87 86, wherein the linear carbon chain or the cyclic carbon chain or both is substituted with at least one heteroatom.

89. (Currently amended) The derivatized single wall carbon nanotube of claim 87 86, wherein the linear carbon chain or the cyclic carbon chain or both is substituted with one or more of the group consisting of =O, =S, hydroxy, an aminoalkyl, an amino acid, and a peptide of 2-8 amino acids.

90. (Previously presented) The derivatized single wall carbon nanotube of claim 86, wherein the fluorinating agent is selected from the group consisting of fluorine, ClF<sub>3</sub>, BrF<sub>3</sub>, IF<sub>5</sub>, XeF<sub>2</sub>, XeF<sub>4</sub>, AgF<sub>2</sub>, and MnF<sub>3</sub>.

91. (Previously presented) The derivatized single wall carbon nanotube of claim 86, wherein the solvation step comprises sonication.

92. (Previously presented) The derivatized single wall carbon nanotube of claim 86, wherein the solvation step comprises using a solvent selected from the group consisting of an alcohol,  $\text{CHCl}_3$ , and dimethylformamide.

93. (Previously presented) The derivatized single wall carbon nanotubes of claim 92, wherein the alcohol is selected from the group consisting of methanol, ethanol, 2,2,2-trifluoroethanol, 2-propanol, 2-butanol, n-pentanol, n-hexanol, cyclohexanol and n-heptanol.

94. (Cancelled)

95. (Previously presented) The derivatized single wall carbon nanotube of claim 86, wherein the amount of substituent bonded to the carbon atoms of the single wall carbon nanotube is at a substituent to carbon ratio of from (a) one substituent to about ten carbon atoms to (b) one substituent to about two carbon atoms.

96. (Previously presented) The derivatized single wall carbon nanotube of claim 95, wherein the amount of substituent bonded to the carbon atoms of the single wall carbon nanotube is at the substituent to carbon ratio of from (a) one substituent to about three carbon atoms to (b) one substituent to about two carbon atoms.